



1

SEQUENCE LISTING

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TECH CENTER 1600/2900

<110> Rybak, Susanna M.
Newton, Dianne L.
The United States of America
as represented by The Secretary of the
Department of Health and Human Services

<120> Recombinant Anti-Tumor RNase

<130> 015280-343100US

<140> US 09/622,613

<141> 2000-08-17

<150> US 60/079,751

<151> 1998-03-27

<150> WO PCT/US99/06641

<151> 1999-03-26

<160> 43

<170> PatentIn Ver. 2.0

<210> 1

<211> 312

<212> DNA

<213> Rana pipiens

<220>

<221> CDS

<222> (1)..(312)

<223> ribonuclease (RaPLR1)

<400> 1

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Gln	Asp	Trp	Leu	Thr	Phe	Gln	Lys	Lys	His	Leu	Thr	Asn	Thr	Arg	Asp	
1				5					10					15		

gtt	gac	tgt	aat	aat	atc	atg	tca	aca	aac	ttg	ttc	cac	tgc	aag	gac	96
Val	Asp	Cys	Asn	Asn	Ile	Met	Ser	Thr	Asn	Leu	Phe	His	Cys	Lys	Asp	
			20					25					30			

aag	aac	act	ttt	atc	tat	tca	cgt	cct	gag	cca	gtg	aag	gcc	atc	tgt	144
Lys	Asn	Thr	Phe	Ile	Tyr	Ser	Arg	Pro	Glu	Pro	Val	Lys	Ala	Ile	Cys	
		35					40					45				

aaa	gga	att	ata	gcc	tcc	aaa	aat	gtg	tta	act	acc	tct	gag	ttt	tat	192
Lys	Gly	Ile	Ile	Ala	Ser	Lys	Asn	Val	Leu	Thr	Thr	Ser	Glu	Phe	Tyr	
	50					55					60					

ctc	tct	gat	tgc	aat	gta	aca	agc	agg	cct	tgc	aag	tat	aaa	tta	aag	240
Leu	Ser	Asp	Cys	Asn	Val	Thr	Ser	Arg	Pro	Cys	Lys	Tyr	Lys	Leu	Lys	
65					70					75					80	

aaa	tca	act	aat	aca	ttt	tgt	gta	act	tgt	gag	aat	caa	gct	cca	gta	288
Lys	Ser	Thr	Asn	Thr	Phe	Cys	Val	Thr	Cys	Glu	Asn	Gln	Ala	Pro	Val	
				85					90						95	

cat ttc gtg ggt gtc gga cat tgc
His Phe Val Gly Val Gly His Cys
100

312

<210> 2
<211> 104
<212> PRT
<213> Rana pipiens

<400> 2
Gln Asp Trp Leu Thr Phe Gln Lys Lys His Leu Thr Asn Thr Arg Asp
1 5 10 15

Val Asp Cys Asn Asn Ile Met Ser Thr Asn Leu Phe His Cys Lys Asp
20 25 30

Lys Asn Thr Phe Ile Tyr Ser Arg Pro Glu Pro Val Lys Ala Ile Cys
35 40 45

Lys Gly Ile Ile Ala Ser Lys Asn Val Leu Thr Thr Ser Glu Phe Tyr
50 55 60

Leu Ser Asp Cys Asn Val Thr Ser Arg Pro Cys Lys Tyr Lys Leu Lys
65 70 75 80

Lys Ser Thr Asn Thr Phe Cys Val Thr Cys Glu Asn Gln Ala Pro Val
85 90 95

His Phe Val Gly Val Gly His Cys
100

<210> 3
<211> 312
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Rana pipiens
ribonuclease with Met23Leu substitution
(recombinant RaPLR1 Met23Leu)

<220>
<221> CDS
<222> (1)..(312)
<223> RaPLR1 Met23Leu

<400> 3
caa gac tgg ctt acg ttt cag aag aag cac ctg aca aac acc cgg gat 48
Gln Asp Trp Leu Thr Phe Gln Lys Lys His Leu Thr Asn Thr Arg Asp
1 5 10 15

gtt gac tgt aat aat atc ctg tca aca aac ttg ttc cac tgc aag gac 96
Val Asp Cys Asn Asn Ile Leu Ser Thr Asn Leu Phe His Cys Lys Asp
20 25 30

aag aac act ttt atc tat tca cgt cct gag cca gtg aag gcc atc tgt 144
Lys Asn Thr Phe Ile Tyr Ser Arg Pro Glu Pro Val Lys Ala Ile Cys
35 40 45

aaa gga att ata gcc tcc aaa aat gtg tta act acc tct gag ttt tat 192
 Lys Gly Ile Ile Ala Ser Lys Asn Val Leu Thr Thr Ser Glu Phe Tyr
 50 55 60

ctc tct gat tgc aat gta aca agc agg cct tgc aag tat aaa tta aag 240
 Leu Ser Asp Cys Asn Val Thr Ser Arg Pro Cys Lys Tyr Lys Leu Lys
 65 70 75 80

aaa tca act aat aca ttt tgt gta act tgt gag aat caa gct cca gta 288
 Lys Ser Thr Asn Thr Phe Cys Val Thr Cys Glu Asn Gln Ala Pro Val
 85 90 95

cat ttc gtg ggt gtc gga cat tgc 312
 His Phe Val Gly Val Gly His Cys
 100

<210> 4

<211> 104

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Rana pipiens
 ribonuclease with Met23Leu substitution
 (recombinant RaPLR1 Met23Leu)

<400> 4

Gln Asp Trp Leu Thr Phe Gln Lys Lys His Leu Thr Asn Thr Arg Asp
 1 5 10 15

Val Asp Cys Asn Asn Ile Leu Ser Thr Asn Leu Phe His Cys Lys Asp
 20 25 30

Lys Asn Thr Phe Ile Tyr Ser Arg Pro Glu Pro Val Lys Ala Ile Cys
 35 40 45

Lys Gly Ile Ile Ala Ser Lys Asn Val Leu Thr Thr Ser Glu Phe Tyr
 50 55 60

Leu Ser Asp Cys Asn Val Thr Ser Arg Pro Cys Lys Tyr Lys Leu Lys
 65 70 75 80

Lys Ser Thr Asn Thr Phe Cys Val Thr Cys Glu Asn Gln Ala Pro Val
 85 90 95

His Phe Val Gly Val Gly His Cys
 100

<210> 5

<211> 315

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Rana pipiens
 ribonuclease with Met at position 1 (recombinant
 Met(-1) RaPLR1)

<220>

<221> CDS

<222> (1)..(315)

<223> Met(-1) RaPLR1

<400> 5

atg caa gac tgg ctt acg ttt cag aag aag cac ctg aca aac acc cgg 48

Met Gln Asp Trp Leu Thr Phe Gln Lys Lys His Leu Thr Asn Thr Arg

1 5 10 15

gat gtt gac tgt aat aat atc atg tca aca aac ttg ttc cac tgc aag 96

Asp Val Asp Cys Asn Asn Ile Met Ser Thr Asn Leu Phe His Cys Lys

20 25 30

gac aag aac act ttt atc tat tca cgt cct gag cca gtg aag gcc atc 144

Asp Lys Asn Thr Phe Ile Tyr Ser Arg Pro Glu Pro Val Lys Ala Ile

35 40 45

tgt aaa gga att ata gcc tcc aaa aat gtg tta act acc tct gag ttt 192

Cys Lys Gly Ile Ile Ala Ser Lys Asn Val Leu Thr Thr Ser Glu Phe

50 55 60

tat ctc tct gat tgc aat gta aca agc agg cct tgc aag tat aaa tta 240

Tyr Leu Ser Asp Cys Asn Val Thr Ser Arg Pro Cys Lys Tyr Lys Leu

65 70 75 80

aag aaa tca act aat aca ttt tgt gta act tgt gag aat caa gct cca 288

Lys Lys Ser Thr Asn Thr Phe Cys Val Thr Cys Glu Asn Gln Ala Pro

85 90 95

gta cat ttc gtg ggt gtc gga cat tgc 315

Val His Phe Val Gly Val Gly His Cys

100 105

<210> 6

<211> 105

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Rana pipiens
ribonuclease with Met at position 1 (recombinant
Met(-1) RaPLR1)

<400> 6

Met Gln Asp Trp Leu Thr Phe Gln Lys Lys His Leu Thr Asn Thr Arg

1 5 10 15

Asp Val Asp Cys Asn Asn Ile Met Ser Thr Asn Leu Phe His Cys Lys

20 25 30

Asp Lys Asn Thr Phe Ile Tyr Ser Arg Pro Glu Pro Val Lys Ala Ile

35 40 45

Cys Lys Gly Ile Ile Ala Ser Lys Asn Val Leu Thr Thr Ser Glu Phe

50 55 60

Tyr Leu Ser Asp Cys Asn Val Thr Ser Arg Pro Cys Lys Tyr Lys Leu

65 70 75 80

Lys Lys Ser Thr Asn Thr Phe Cys Val Thr Cys Glu Asn Gln Ala Pro
 85 90 95

Val His Phe Val Gly Val Gly His Cys
 100 105

<210> 7

<211> 315

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Rana pipiens
 ribonuclease with Met at position 1 and Met24Leu
 substitution (recombinant Met(-1) RaPLR1 Met23Leu)

<220>

<221> CDS

<222> (1)..(315)

<223> Met(-1) RaPLR1 Met23Leu

<400> 7

atg caa gac tgg ctt acg ttt cag aag aag cac ctg aca aac acc cgg 48
 Met Gln Asp Trp Leu Thr Phe Gln Lys Lys His Leu Thr Asn Thr Arg
 1 5 10 15

gat gtt gac tgt aat aat atc ctg tca aca aac ttg ttc cac tgc aag 96
 Asp Val Asp Cys Asn Asn Ile Leu Ser Thr Asn Leu Phe His Cys Lys
 20 25 30

gac aag aac act ttt atc tat tca cgt cct gag cca gtg aag gcc atc 144
 Asp Lys Asn Thr Phe Ile Tyr Ser Arg Pro Glu Pro Val Lys Ala Ile
 35 40 45

tgt aaa gga att ata gcc tcc aaa aat gtg tta act acc tct gag ttt 192
 Cys Lys Gly Ile Ile Ala Ser Lys Asn Val Leu Thr Thr Ser Glu Phe
 50 55 60

tat ctc tct gat tgc aat gta aca agc agg cct tgc aag tat aaa tta 240
 Tyr Leu Ser Asp Cys Asn Val Thr Ser Arg Pro Cys Lys Tyr Lys Leu
 65 70 75 80

aag aaa tca act att aca ttt tgt gta act tgt gag aat caa gct cca 288
 Lys Lys Ser Thr Ile Thr Phe Cys Val Thr Cys Glu Asn Gln Ala Pro
 85 90 95

gta cat ttc gtg ggt gtc gga cat tgc 315
 Val His Phe Val Gly Val Gly His Cys
 100 105

<210> 8

<211> 105

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Rana pipiens
 ribonuclease with Met at position 1 and Met24Leu
 substitution (recombinant Met(-1) RaPLR1 Met23Leu)

<400> 8

Met Gln Asp Trp Leu Thr Phe Gln Lys Lys His Leu Thr Asn Thr Arg
 1 5 10 15

Asp Val Asp Cys Asn Asn Ile Leu Ser Thr Asn Leu Phe His Cys Lys
 20 25 30

Asp Lys Asn Thr Phe Ile Tyr Ser Arg Pro Glu Pro Val Lys Ala Ile
 35 40 45

Cys Lys Gly Ile Ile Ala Ser Lys Asn Val Leu Thr Thr Ser Glu Phe
 50 55 60

Tyr Leu Ser Asp Cys Asn Val Thr Ser Arg Pro Cys Lys Tyr Lys Leu
 65 70 75 80

Lys Lys Ser Thr Ile Thr Phe Cys Val Thr Cys Glu Asn Gln Ala Pro
 85 90 95

Val His Phe Val Gly Val Gly His Cys
 100 105

<210> 9

<211> 111

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Rana pipiens
 ribonuclease with (His)6 tag, Met at position 7
 and Met30Leu substitution (recombinant Met(-1)
 RaPLR1 Met23Leu-(His)6)

<400> 9

His His His His His His Met Gln Asp Trp Leu Thr Phe Gln Lys Lys
 1 5 10 15

His Leu Thr Asn Thr Arg Asp Val Asp Cys Asn Asn Ile Leu Ser Thr
 20 25 30

Asn Leu Phe His Cys Lys Asp Lys Asn Thr Phe Ile Tyr Ser Arg Pro
 35 40 45

Glu Pro Val Lys Ala Ile Cys Lys Gly Ile Ile Ala Ser Lys Asn Val
 50 55 60

Leu Thr Thr Ser Glu Phe Tyr Leu Ser Asp Cys Asn Val Thr Ser Arg
 65 70 75 80

Pro Cys Lys Tyr Lys Leu Lys Lys Ser Thr Ile Thr Phe Cys Val Thr
 85 90 95

Cys Glu Asn Gln Ala Pro Val His Phe Val Gly Val Gly His Cys
 100 105 110

<210> 10

<211> 312

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Rana pipiens
ribonuclease with Gln1Ser substitution
(recombinant RaPLR1 Q1S)

<220>

<221> CDS

<222> (1)..(312)

<223> RaPLR1 Q1S

<400> 10

tca	gac	tgg	ctt	acg	ttt	cag	aag	aag	cac	ctg	aca	aac	acc	cgg	gat	48
Ser	Asp	Trp	Leu	Thr	Phe	Gln	Lys	Lys	His	Leu	Thr	Asn	Thr	Arg	Asp	
1				5					10					15		

ggt	gac	tgt	aat	aat	atc	atg	tca	aca	aac	ttg	ttc	cac	tgc	aag	gac	96
Val	Asp	Cys	Asn	Asn	Ile	Met	Ser	Thr	Asn	Leu	Phe	His	Cys	Lys	Asp	
			20					25					30			

aag	aac	act	ttt	atc	tat	tca	cgt	cct	gag	cca	gtg	aag	gcc	atc	tgt	144
Lys	Asn	Thr	Phe	Ile	Tyr	Ser	Arg	Pro	Glu	Pro	Val	Lys	Ala	Ile	Cys	
		35					40					45				

aaa	gga	att	ata	gcc	tcc	aaa	aat	gtg	tta	act	acc	tct	gag	ttt	tat	192
Lys	Gly	Ile	Ile	Ala	Ser	Lys	Asn	Val	Leu	Thr	Thr	Ser	Glu	Phe	Tyr	
	50					55					60					

ctc	tct	gat	tgc	aat	gta	aca	agc	agg	cct	tgc	aag	tat	aaa	tta	aag	240
Leu	Ser	Asp	Cys	Asn	Val	Thr	Ser	Arg	Pro	Cys	Lys	Tyr	Lys	Leu	Lys	
65					70				75					80		

aaa	tca	act	aat	aca	ttt	tgt	gta	act	tgt	gag	aat	caa	gct	cca	gta	288
Lys	Ser	Thr	Asn	Thr	Phe	Cys	Val	Thr	Cys	Glu	Asn	Gln	Ala	Pro	Val	
				85				90					95			

cat	ttc	gtg	ggt	gtc	gga	cat	tgc									312
His	Phe	Val	Gly	Val	Gly	His	Cys									
				100												

<210> 11

<211> 104

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Rana pipiens
ribonuclease with Gln1Ser substitution
(recombinant RaPLR1 Q1S)

<400> 11

Ser	Asp	Trp	Leu	Thr	Phe	Gln	Lys	Lys	His	Leu	Thr	Asn	Thr	Arg	Asp
1				5					10					15	

Val	Asp	Cys	Asn	Asn	Ile	Met	Ser	Thr	Asn	Leu	Phe	His	Cys	Lys	Asp
			20					25					30		

Lys	Asn	Thr	Phe	Ile	Tyr	Ser	Arg	Pro	Glu	Pro	Val	Lys	Ala	Ile	Cys
			35				40					45			

Lys Gly Ile Ile Ala Ser Lys Asn Val Leu Thr Thr Ser Glu Phe Tyr
50 55 60

Leu Ser Asp Cys Asn Val Thr Ser Arg Pro Cys Lys Tyr Lys Leu Lys
65 70 75 80

Lys Ser Thr Asn Thr Phe Cys Val Thr Cys Glu Asn Gln Ala Pro Val
85 90 95

His Phe Val Gly Val Gly His Cys
100

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<210> 12
<211> 315
<212> DNA
<213> Artificial Sequence
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<220>
<223> Description of Artificial Sequence:Rana pipiens
ribonuclease with Met at position 1 and Gln2Ser
substitution (recombinant Met(-1) RaPLR1 Q1S)

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<220>
<221> CDS
<222> (1)..(315)
<223> Met(-1) RaPLR1 Q1S
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<400>	12															48	-
atg	tca	gac	tgg	ctt	acg	ttt	cag	aag	aag	cac	ctg	aca	aac	acc	cgg		
Met	Ser	Asp	Trp	Leu	Thr	Phe	Gln	Lys	Lys	His	Leu	Thr	Asn	Thr	Arg		
1				5					10					15			
gat	gtt	gac	tgt	aat	aat	atc	atg	tca	aca	aac	ttg	ttc	cac	tgc	aag		
Asp	Val	Asp	Cys	Asn	Asn	Ile	Met	Ser	Thr	Asn	Leu	Phe	His	Cys	Lys		
			20					25					30				
gac	aag	aac	act	ttt	atc	tat	tca	cgt	cct	gag	cca	gtg	aag	gcc	atc		
Asp	Lys	Asn	Thr	Phe	Ile	Tyr	Ser	Arg	Pro	Glu	Pro	Val	Lys	Ala	Ile		
		35					40					45					
tgt	aaa	gga	att	ata	gcc	tcc	aaa	aat	gtg	tta	act	acc	tct	gag	ttt		
Cys	Lys	Gly	Ile	Ile	Ala	Ser	Lys	Asn	Val	Leu	Thr	Thr	Ser	Glu	Phe		
	50					55					60						
tat	ctc	tct	gat	tgc	aat	gta	aca	agc	agg	cct	tgc	aag	tat	aaa	tta		
Tyr	Leu	Ser	Asp	Cys	Asn	Val	Thr	Ser	Arg	Pro	Cys	Lys	Tyr	Lys	Leu		
65					70					75					80		
aag	aaa	tca	act	aat	aca	ttt	tgt	gta	act	tgt	gag	aat	caa	gct	cca		
Lys	Lys	Ser	Thr	Asn	Thr	Phe	Cys	Val	Thr	Cys	Glu	Asn	Gln	Ala	Pro		
				85					90					95			
gta	cat	ttc	gtg	ggg	gtc	gga	cat	tgc									315
Val	His	Phe	Val	Gly	Val	Gly	His	Cys									
			100					105									

<210> 13
 <211> 105
 <212> PRT
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Rana pipiens
 ribonuclease with Met at position 1 and Gln2Ser
 substitution (recombinant Met (-1) RaPLR1 Q1S)

<400> 13

Met Ser Asp Trp Leu Thr Phe Gln Lys Lys His Leu Thr Asn Thr Arg
 1 5 10 15

Asp Val Asp Cys Asn Asn Ile Met Ser Thr Asn Leu Phe His Cys Lys
 20 25 30

Asp Lys Asn Thr Phe Ile Tyr Ser Arg Pro Glu Pro Val Lys Ala Ile
 35 40 45

Cys Lys Gly Ile Ile Ala Ser Lys Asn Val Leu Thr Thr Ser Glu Phe
 50 55 60

Tyr Leu Ser Asp Cys Asn Val Thr Ser Arg Pro Cys Lys Tyr Lys Leu
 65 70 75 80

Lys Lys Ser Thr Asn Thr Phe Cys Val Thr Cys Glu Asn Gln Ala Pro
 85 90 95

Val His Phe Val Gly Val Gly His Cys
 100 105

<210> 14
 <211> 330
 <212> DNA
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Rana
 catesbeiana oocyte ribonuclease (RaCOR1) synthetic
 gene modified to use E. coli preferred codons

<220>

<221> CDS

<222> (1)..(330)

<223> RaCOR1 for E. coli expression system

<400> 14

cag aac tgg gct act ttc cag cag aaa cat atc atc aac act ccg atc 48
 Gln Asn Trp Ala Thr Phe Gln Gln Lys His Ile Ile Asn Thr Pro Ile
 1 5 10 15

atc tgc aac act atc atg gac aac aac atc tac atc gtt ggt ggt cag 96
 Ile Cys Asn Thr Ile Met Asp Asn Asn Ile Tyr Ile Val Gly Gly Gln
 20 25 30

tgc aaa cgt gtt aac act ttc atc atc tct tct gct act act gtt aaa 144
 Cys Lys Arg Val Asn Thr Phe Ile Ile Ser Ser Ala Thr Thr Val Lys
 35 40 45

gct atc tgc act ggt gtt atc aac atg aac gtt ctg tct act act cgt 192
 Ala Ile Cys Thr Gly Val Ile Asn Met Asn Val Leu Ser Thr Thr Arg
 50 55 60

ttc cag ctg aac act tgc act cgt act tct atc act ccg cgt ccg tgc 240
 Phe Gln Leu Asn Thr Cys Thr Arg Thr Ser Ile Thr Pro Arg Pro Cys
 65 70 75 80

ccg tac tct tct cgt act gaa act aac tac atc tgc gtt aaa tgc gaa 288
 Pro Tyr Ser Ser Arg Thr Glu Thr Asn Tyr Ile Cys Val Lys Cys Glu
 85 90 95

aac cag tac ccg gtt cat ttc gct ggt atc ggt cgt tgc ccg 330
 Asn Gln Tyr Pro Val His Phe Ala Gly Ile Gly Arg Cys Pro
 100 105 110

<210> 15

<211> 110

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Rana
 catesbeiana oocyte ribonuclease (RaCOR1) synthetic
 gene modified to use E. coli preferred codons

<400> 15

Gln Asn Trp Ala Thr Phe Gln Gln Lys His Ile Ile Asn Thr Pro Ile
 1 5 10 15

Ile Cys Asn Thr Ile Met Asp Asn Asn Ile Tyr Ile Val Gly Gly Gln
 20 25 30

Cys Lys Arg Val Asn Thr Phe Ile Ile Ser Ser Ala Thr Thr Val Lys
 35 40 45

Ala Ile Cys Thr Gly Val Ile Asn Met Asn Val Leu Ser Thr Thr Arg
 50 55 60

Phe Gln Leu Asn Thr Cys Thr Arg Thr Ser Ile Thr Pro Arg Pro Cys
 65 70 75 80

Pro Tyr Ser Ser Arg Thr Glu Thr Asn Tyr Ile Cys Val Lys Cys Glu
 85 90 95

Asn Gln Tyr Pro Val His Phe Ala Gly Ile Gly Arg Cys Pro
 100 105 110

<210> 16

<211> 333

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Rana
~~catesbeiana-ribonuclease-with-Met-at-position-1~~
 (recombinant Met(-1) RaCOR1)

<220>
 <221> CDS
 <222> (1)..(333)
 <223> Met(-1) RaCOR1

<400> 16
 atg cag aac tgg gct act ttc cag cag aaa cat atc atc aac act ccg 48
 Met Gln Asn Trp Ala Thr Phe Gln Gln Lys His Ile Ile Asn Thr Pro
 1 5 10 15
 atc atc tgc aac act atc atg gac aac aac atc tac atc gtt ggt ggt 96
 Ile Ile Cys Asn Thr Ile Met Asp Asn Asn Ile Tyr Ile Val Gly Gly
 20 25 30
 cag tgc aaa cgt gtt aac act ttc atc atc tct tct gct act act gtt 144
 Gln Cys Lys Arg Val Asn Thr Phe Ile Ile Ser Ser Ala Thr Thr Val
 35 40 45
 aaa gct atc tgc act ggt gtt atc aac atg aac gtt ctg tct act act 192
 Lys Ala Ile Cys Thr Gly Val Ile Asn Met Asn Val Leu Ser Thr Thr
 50 55 60
 cgt ttc cag ctg aac act tgc act cgt act tct atc act ccg cgt ccg 240
 Arg Phe Gln Leu Asn Thr Cys Thr Arg Thr Ser Ile Thr Pro Arg Pro
 65 70 75 80
 tgc ccg tac tct tct cgt act gaa act aac tac atc tgc gtt aaa tgc 288
 Cys Pro Tyr Ser Ser Arg Thr Glu Thr Asn Tyr Ile Cys Val Lys Cys
 85 90 95
 gaa aac cag tac ccg gtt cat ttc gct ggt atc ggt cgt tgc ccg 333
 Glu Asn Gln Tyr Pro Val His Phe Ala Gly Ile Gly Arg Cys Pro
 100 105 110

<210> 17
 <211> 111
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:Rana
 catesbeiana ribonuclease with Met at position 1
 (recombinant Met(-1) RaCOR1)

<400> 17
 Met Gln Asn Trp Ala Thr Phe Gln Gln Lys His Ile Ile Asn Thr Pro
 1 5 10 15
 Ile Ile Cys Asn Thr Ile Met Asp Asn Asn Ile Tyr Ile Val Gly Gly
 20 25 30
 Gln Cys Lys Arg Val Asn Thr Phe Ile Ile Ser Ser Ala Thr Thr Val
 35 40 45
 Lys Ala Ile Cys Thr Gly Val Ile Asn Met Asn Val Leu Ser Thr Thr
 50 55 60
 Arg Phe Gln Leu Asn Thr Cys Thr Arg Thr Ser Ile Thr Pro Arg Pro
 65 70 75 80

Cys Pro Tyr Ser Ser Arg Thr Glu Thr Asn Tyr Ile Cys Val Lys Cys
 85 90 95

Glu Asn Gln Tyr Pro Val His Phe Ala Gly Ile Gly Arg Cys Pro
 100 105 110

<210> 18
 <211> 330
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Rana
 catesbeiana ribonuclease with Met22Leu and
 Met75Leu substitutions (recombinant RaCOR1
 Met22Leu Met57Leu)

<220>
 <221> CDS
 <222> (1)..(330)
 <223> RaCOR1 Met22Leu Met57Leu

<400> 18
 cag aac tgg gct act ttc cag cag aaa cat atc atc aac act ccg atc 48
 Gln Asn Trp Ala Thr Phe Gln Gln Lys His Ile Ile Asn Thr Pro Ile
 1 5 10 15

atc tgc aac act atc ctg gac aac aac atc tac atc gtt ggt ggt cag 96
 Ile Cys Asn Thr Ile Leu Asp Asn Asn Ile Tyr Ile Val Gly Gly Gln
 20 25 30

tgc aaa cgt gtt aac act ttc atc atc tct tct gct act act gtt aaa 144
 Cys Lys Arg Val Asn Thr Phe Ile Ile Ser Ser Ala Thr Thr Val Lys
 35 40 45

gct atc tgc act ggt gtt atc aac ctg aac gtt ctg tct act act cgt 192
 Ala Ile Cys Thr Gly Val Ile Asn Leu Asn Val Leu Ser Thr Thr Arg
 50 55 60

ttc cag ctg aac act tgc act cgt act tct atc act ccg cgt ccg tgc 240
 Phe Gln Leu Asn Thr Cys Thr Arg Thr Ser Ile Thr Pro Arg Pro Cys
 65 70 75 80

ccg tac tct tct cgt act gaa act aac tac atc tgc gtt aaa tgc gaa 288
 Pro Tyr Ser Ser Arg Thr Glu Thr Asn Tyr Ile Cys Val Lys Cys Glu
 85 90 95

aac cag tac ccg gtt cat ttc gct ggt atc ggt cgt tgc ccg 330
 Asn Gln Tyr Pro Val His Phe Ala Gly Ile Gly Arg Cys Pro
 100 105 110

<210> 19
 <211> 110
 <212> PRT
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Rana
catesbeiana ribonuclease with Met22Leu and
Met75Leu substitutions (recombinant RaCOR1
Met22Leu Met57Leu)

<400> 19

Gln Asn Trp Ala Thr Phe Gln Gln Lys His Ile Ile Asn Thr Pro Ile
1 5 10 15

Ile Cys Asn Thr Ile Leu Asp Asn Asn Ile Tyr Ile Val Gly Gly Gln
20 25 30

Cys Lys Arg Val Asn Thr Phe Ile Ile Ser Ser Ala Thr Thr Val Lys
35 40 45

Ala Ile Cys Thr Gly Val Ile Asn Leu Asn Val Leu Ser Thr Thr Arg
50 55 60

Phe Gln Leu Asn Thr Cys Thr Arg Thr Ser Ile Thr Pro Arg Pro Cys
65 70 75 80

Pro Tyr Ser Ser Arg Thr Glu Thr Asn Tyr Ile Cys Val Lys Cys Glu
85 90 95

Asn Gln Tyr Pro Val His Phe Ala Gly Ile Gly Arg Cys Pro
100 105 110

<210> 20

<211> 333

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Rana
catesbeiana ribonuclease with Met at position 1,
Met23Leu and Met58Leu substitutions (recombinant
Met(-1) RaCOR1 Met22Leu Met57Leu)

<220>

<221> CDS

<222> (1)..(333)

<223> Met(-1) RaCOR1 Met22Leu Met57Leu

<400> 20

atg cag aac tgg gct act ttc cag cag aaa cat atc atc aac act ccg 48
Met Gln Asn Trp Ala Thr Phe Gln Gln Lys His Ile Ile Asn Thr Pro
1 5 10 15

atc atc tgc aac act atc ctg gac aac aac atc tac atc gtt ggt ggt 96
Ile Ile Cys Asn Thr Ile Leu Asp Asn Asn Ile Tyr Ile Val Gly Gly
20 25 30

cag tgc aaa cgt gtt aac act ttc atc atc tct tct gct act act gtt 144
Gln Cys Lys Arg Val Asn Thr Phe Ile Ile Ser Ser Ala Thr Thr Val
35 40 45

aaa gct atc tgc act ggt gtt atc aac ctg aac gtt ctg tct act act 192
Lys Ala Ile Cys Thr Gly Val Ile Asn Leu Asn Val Leu Ser Thr Thr
50 55 60

```

cgt ttc cag ctg aac act tgc act cgt act tct atc act ccg cgt ccg      240
Arg Phe Gln Leu Asn Thr Cys Thr Arg Thr Ser Ile Thr Pro Arg Pro
  65                      70                      75                      80

tgc ccg tac tct tct cgt act gaa act aac tac atc tgc gtt aaa tgc      288
Cys Pro Tyr Ser Ser Arg Thr Glu Thr Asn Tyr Ile Cys Val Lys Cys
          85                      90                      95

gaa aac cag tac ccg gtt cat ttc gct ggt atc ggt cgt tgc ccg      333
Glu Asn Gln Tyr Pro Val His Phe Ala Gly Ile Gly Arg Cys Pro
          100                      105                      110

```

```

<210> 21
<211> 111
<212> PRT
<213> Artificial Sequence

```

```

<220>
<223> Description of Artificial Sequence:Rana
      catesbeiana ribonuclease with Met at position 1,
      Met23Leu and Met58Leu substitutions (recombinant
      Met(-1) RaCOR1 Met22Leu Met57Leu)

```

```

<400> 21
Met Gln Asn Trp Ala Thr Phe Gln Gln Lys His Ile Ile Asn Thr Pro
  1                      5                      10                      15

Ile Ile Cys Asn Thr Ile Leu Asp Asn Asn Ile Tyr Ile Val Gly Gly
          20                      25                      30

Gln Cys Lys Arg Val Asn Thr Phe Ile Ile Ser Ser Ala Thr Thr Val
          35                      40                      45

Lys Ala Ile Cys Thr Gly Val Ile Asn Leu Asn Val Leu Ser Thr Thr
          50                      55                      60

Arg Phe Gln Leu Asn Thr Cys Thr Arg Thr Ser Ile Thr Pro Arg Pro
  65                      70                      75                      80

Cys Pro Tyr Ser Ser Arg Thr Glu Thr Asn Tyr Ile Cys Val Lys Cys
          85                      90                      95

Glu Asn Gln Tyr Pro Val His Phe Ala Gly Ile Gly Arg Cys Pro
          100                      105                      110

```

```

<210> 22
<211> 117
<212> PRT
<213> Artificial Sequence

```

```

<220>
<223> Description of Artificial Sequence:Rana
      catesbeiana ribonuclease with (His)6 tag, Met at
      position 7, Met23Leu and Met58Leu substitutions
      (recombinant Met(-1) RaCOR1 Met22Leu Met57Leu-(His)6)

```

```

<400> 22
His His His His His His Met Gln Asn Trp Ala Thr Phe Gln Gln Lys
  1                      5                      10                      15

```

His Ile Ile Asn Thr Pro Ile Ile Cys Asn Thr Ile Leu Asp Asn Asn
20 25 30

Ile Tyr Ile Val Gly Gly Gln Cys Lys Arg Val Asn Thr Phe Ile Ile
35 40 45

Ser Ser Ala Thr Thr Val Lys Ala Ile Cys Thr Gly Val Ile Asn Leu
50 55 60

Asn Val Leu Ser Thr Thr Arg Phe Gln Leu Asn Thr Cys Thr Arg Thr
65 70 75 80

Ser Ile Thr Pro Arg Pro Cys Pro Tyr Ser Ser Arg Thr Glu Thr Asn
85 90 95

Tyr Ile Cys Val Lys Cys Glu Asn Gln Tyr Pro Val His Phe Ala Gly
100 105 110

Ile Gly Arg Cys Pro
115

<210> 23

<211> 330

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Rana
catesbeiana ribonuclease with Gln1Ser substitution
(recombinant RaCOR1 Q1S)

<220>

<221> CDS

<222> (1) .. (330)

<223> RaCOR1 Q1S

<400> 23

tca aac tgg gct act ttc cag cag aaa cat atc atc aac act ccg atc 48
Ser Asn Trp Ala Thr Phe Gln Gln Lys His Ile Ile Asn Thr Pro Ile
1 5 10 15

atc tgc aac act atc atg gac aac aac atc tac atc gtt ggt ggt cag 96
Ile Cys Asn Thr Ile Met Asp Asn Asn Ile Tyr Ile Val Gly Gly Gln
20 25 30

tgc aaa cgt gtt aac act ttc atc atc tct tct gct act act gtt aaa 144
Cys Lys Arg Val Asn Thr Phe Ile Ile Ser Ser Ala Thr Thr Val Lys
35 40 45

gct atc tgc act ggt gtt atc aac atg aac gtt ctg tct act act cgt 192
Ala Ile Cys Thr Gly Val Ile Asn Met Asn Val Leu Ser Thr Thr Arg
50 55 60

ttc cag ctg aac act tgc act cgt act tct atc act ccg cgt ccg tgc 240
Phe Gln Leu Asn Thr Cys Thr Arg Thr Ser Ile Thr Pro Arg Pro Cys
65 70 75 80

ccg tac tct tct cgt act gaa act aac tac atc tgc gtt aaa tgc gaa 288
Pro Tyr Ser Ser Arg Thr Glu Thr Asn Tyr Ile Cys Val Lys Cys Glu
85 90 95

```

aac cag tac ccg gtt cat ttc gct ggt atc ggt cgt tgc ccg      330
Asn Gln Tyr Pro Val His Phe Ala Gly Ile Gly Arg Cys Pro
      100                      105                      110

```

```

<210> 24
<211> 110
<212> PRT
<213> Artificial Sequence

```

```

<220>
<223> Description of Artificial Sequence:Rana
      catesbeiana ribonuclease with Gln1Ser substitution
      (recombinant RaCOR1 Q1S)

```

```

<400> 24
Ser Asn Trp Ala Thr Phe Gln Gln Lys His Ile Ile Asn Thr Pro Ile
  1                      5                      10                      15

Ile Cys Asn Thr Ile Met Asp Asn Asn Ile Tyr Ile Val Gly Gly Gln
      20                      25                      30

Cys Lys Arg Val Asn Thr Phe Ile Ile Ser Ser Ala Thr Thr Val Lys
      35                      40                      45

Ala Ile Cys Thr Gly Val Ile Asn Met Asn Val Leu Ser Thr Thr Arg
      50                      55                      60

Phe Gln Leu Asn Thr Cys Thr Arg Thr Ser Ile Thr Pro Arg Pro Cys
  65                      70                      75                      80

Pro Tyr Ser Ser Arg Thr Glu Thr Asn Tyr Ile Cys Val Lys Cys Glu
      85                      90                      95

Asn Gln Tyr Pro Val His Phe Ala Gly Ile Gly Arg Cys Pro
      100                      105                      110

```

```

<210> 25
<211> 333
<212> DNA
<213> Artificial Sequence

```

```

<220>
<223> Description of Artificial Sequence:Rana
      catesbeiana ribonuclease with Met at position 1
      and Gln2Ser substitution

```

```

<220>
<221> CDS
<222> ()..(333)
<223> Met(-1) RaCOR1 Q1S

```

```

<400> 25
atg tca aac tgg gct act ttc cag cag aaa cat atc atc aac act ccg      48
Met Ser Asn Trp Ala Thr Phe Gln Gln Lys His Ile Ile Asn Thr Pro
  1                      5                      10                      15

atc atc tgc aac act atc atg gac aac aac atc tac atc gtt ggt ggt      96
Ile Ile Cys Asn Thr Ile Met Asp Asn Asn Ile Tyr Ile Val Gly Gly
      20                      25                      30

```


cag tgc aaa cgt gtt aac act ttc atc atc tct tct gct act act gtt 144
 Gln Cys Lys Arg Val Asn Thr Phe Ile Ile Ser Ser Ala Thr Thr Val
 35 40 45

aaa gct atc tgc act ggt gtt atc aac atg aac gtt ctg tct act act 192
 Lys Ala Ile Cys Thr Gly Val Ile Asn Met Asn Val Leu Ser Thr Thr
 50 55 60

cgt ttc cag ctg aac act tgc act cgt act tct atc act ccg cgt ccg 240
 Arg Phe Gln Leu Asn Thr Cys Thr Arg Thr Ser Ile Thr Pro Arg Pro
 65 70 75 80

tgc ccg tac tct tct cgt act gaa act aac tac atc tgc gtt aaa tgc 288
 Cys Pro Tyr Ser Ser Arg Thr Glu Thr Asn Tyr Ile Cys Val Lys Cys
 85 90 95

gaa aac cag tac ccg gtt cat ttc gct ggt atc ggt cgt tgc ccg 333
 Glu Asn Gln Tyr Pro Val His Phe Ala Gly Ile Gly Arg Cys Pro
 100 105 110

<210> 26

<211> 111

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Rana
 catesbeiana ribonuclease with Met at position 1
 and Gln2Ser substitution

<400> 26

Met Ser Asn Trp Ala Thr Phe Gln Gln Lys His Ile Ile Asn Thr Pro
 1 5 10 15

Ile Ile Cys Asn Thr Ile Met Asp Asn Asn Ile Tyr Ile Val Gly Gly
 20 25 30

Gln Cys Lys Arg Val Asn Thr Phe Ile Ile Ser Ser Ala Thr Thr Val
 35 40 45

Lys Ala Ile Cys Thr Gly Val Ile Asn Met Asn Val Leu Ser Thr Thr
 50 55 60

Arg Phe Gln Leu Asn Thr Cys Thr Arg Thr Ser Ile Thr Pro Arg Pro
 65 70 75 80

Cys Pro Tyr Ser Ser Arg Thr Glu Thr Asn Tyr Ile Cys Val Lys Cys
 85 90 95

Glu Asn Gln Tyr Pro Val His Phe Ala Gly Ile Gly Arg Cys Pro
 100 105 110

<210> 27

<211> 2855

<212> DNA

<213> Rana pipiens

<220>

<223> Rana pipiens ribonuclease (RaPLR1) Clone 5a1b cDNA
insert

<220>

<221> CDS

<222> (97)..(481)

<223> RaPLR1

<220>

<221> sig_peptide

<222> (97)..(165)

<400> 27

atcagttgct catcgtttga ccaagttggt ttccatctga agcaatatatt atatataatt 60

tctcttatat	ataaaggcct	gatcacgact	tccaga	atg	ttt	cca	aaa	ttc	tca	114
				Met	Phe	Pro	Lys	Phe	Ser	
				1				5		

ttt	ctc	ctg	ata	ttt	gca	gtt	gtt	ttg	agt	ctc	act	cat	aag	tcc	tta	162
Phe	Leu	Leu	Ile	Phe	Ala	Val	Val	Leu	Ser	Leu	Thr	His	Lys	Ser	Leu	
			10					15					20			

tgt	caa	gac	tgg	ctt	acg	ttt	cag	aag	aag	cac	ctg	aca	aac	acc	cgg	210
Cys	Gln	Asp	Trp	Leu	Thr	Phe	Gln	Lys	Lys	His	Leu	Thr	Asn	Thr	Arg	
		25					30					35				

gat	gtt	gac	tgt	aat	aat	atc	atg	tca	aca	aac	ttg	ttc	cac	tgc	aag	258
Asp	Val	Asp	Cys	Asn	Asn	Ile	Met	Ser	Thr	Asn	Leu	Phe	His	Cys	Lys	
	40					45					50					

gac	aag	aac	act	ttt	atc	tat	tca	cgt	cct	gag	cca	gtg	aag	gcc	atc	306
Asp	Lys	Asn	Thr	Phe	Ile	Tyr	Ser	Arg	Pro	Glu	Pro	Val	Lys	Ala	Ile	
	55				60					65					70	

tgt	aaa	gga	att	ata	gcc	tcc	aaa	aat	gtg	tta	act	acc	tct	gag	ttt	354
Cys	Lys	Gly	Ile	Ile	Ala	Ser	Lys	Asn	Val	Leu	Thr	Thr	Ser	Glu	Phe	
			75						80					85		

tat	ctc	tct	gat	tgc	aat	gta	aca	agc	agg	cct	tgc	aag	tat	aaa	tta	402
Tyr	Leu	Ser	Asp	Cys	Asn	Val	Thr	Ser	Arg	Pro	Cys	Lys	Tyr	Lys	Leu	
			90					95					100			

aag	aaa	tca	act	aat	aca	ttt	tgt	gta	act	tgt	gag	aat	caa	gct	cca	450
Lys	Lys	Ser	Thr	Asn	Thr	Phe	Cys	Val	Thr	Cys	Glu	Asn	Gln	Ala	Pro	
		105					110					115				

gta	cat	ttc	gtg	ggg	gtc	gga	cat	tgc	tagaaat	atg	tttgacaaca	497
Val	His	Phe	Val	Gly	Val	Gly	His	Cys				
	120					125						

gggatgtgat aagcagctgc aagaaattat tttgaagtga atttactaaa gacactaatt 557

ttgcataaat tttccccaga gcttaccggg agtaagaaaa ttccaacagg gagccaagca 617

cagaaagtaa actaaggagc caaagtaatt ataaaagtca cactggaccg ctgctactgc 677

actcagatga ccaaatgaga aacagacaaa aacagcagag ttgggaagcg cagatccggg 737

aggtggcggg gagtcaattg gggatggagt ccatgtgaga tttggaaccg tttgttgctg 797

gtgaagcatg tggccggtgc acagtacaca tggggaaaga tagtcggatt ggccgggctc 857
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 tgggggctgt ggacagaggg agctgaggac caggggtggg aggcctggag agaattttca 977
 aacagctgac gtggccgggg ctgggcagca tcggggaggg gaagggtgg gctcagatcc 1037
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 gttggttgca tgttttgtcg gcggtggact gttttgaatt tcacatggat tccatcttcg 1397
 gttggttcct tgccacctcc tggatctgtg ctttccaatt ctgttttttc cccagcgctt 1457
 agtggatgca gtgaaactct ggtgattacc atcatccaat catgtgcaag aaaaaatatt 1517
 ttcataatttc ttccacccaa ttgggtattc attaggaagt ttgagcacat tcacgttcta 1577
 gggaaaatga gtgcaactgc acttccaaag ttcacagtct atttgccttt agtaaatcca 1637
 cccattatt tctgagcaga ggacaaatct atggcaacaa aaaaacttta cctactgaat 1697
 tattttatat tgattgaaga taatctttct ttcatttcct aaatattgta atcaaaatta 1757
 atacataaca gctatgtatt ataccacagc agcaaagtgt aaaatagttt taaacgtaaa 1817
 atatgtttta ccttaaagtg gaagtaaact tctatcacta aattttacct ataggtgaga 1877
 cccatgcgct cttcaggaat ggccgctggt gctgttcctt cagagccctg tgctgcgaac 1937
 ggccgctccc gtgtgcatgt acaggagtga cgtcatcaca gctccggcca gtcacagagt 1997
 tagagttcaa gtgtgagtgg cttgagccac gatgatgtcg ctcccaaaca tgtgtgcggg 2057
 ggtctccgtt tgccgagcag gacactgggg gaatagcatg ggtgtgccgt tccttcagag 2117
 catatgcgtg ggtgacgtca ctagctgcat ctaaagtaat atctcctaaa caatgcacat 2177
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 aaaaatctta cctatgtagg gatgaggaga gcaggctgac atattaaagt aaaaatctta 2357
 cctatagtgg ttgaaagtag ttgaaaataa gatggcctgc agggctctta aaaggctagg 2417
 atagcacagt atccacatga ggcaccagat ctcgctcccc cacacatgag tagcaaggag 2477
 caatggtaat gtgagtttct taggctcgac cgttaaatag cgttggccct ccaagtgata 2537
 catgggagat aagcagatgt ccgcgtatgc acgcagacat atgtgggagg atgttgggat 2597
 aggacgatca gagagatgct cagatctgcc cgaaggagaa aggtggaaac atccattcaa 2657

tgtcatatgc ctaaagaagc caccacccat aaaaaggttaa tagatcatca ggtggcagcc 2717
aaccacacca ggcccaaagg aggggtggccc cagtgaaccg tataggaaca gcactcagct 2777
atcacataat tacacaagag tatagagacc cattgtgggt attaacaacc aaatggctaa 2837
aaaaaaaaaa aaaaaaaaaa 2855

<210> 28

<211> 127

<212> PRT

<213> Rana pipiens

<400> 28

Met Phe Pro Lys Phe Ser Phe Leu Leu Ile Phe Ala Val Val Leu Ser
1 5 10 15

Leu Thr His Lys Ser Leu Cys Gln Asp Trp Leu Thr Phe Gln Lys Lys
20 25 30

His Leu Thr Asn Thr Arg Asp Val Asp Cys Asn Asn Ile Met Ser Thr
35 40 45

Asn Leu Phe His Cys Lys Asp Lys Asn Thr Phe Ile Tyr Ser Arg Pro
50 55 60

Glu Pro Val Lys Ala Ile Cys Lys Gly Ile Ile Ala Ser Lys Asn Val
65 70 75 80

Leu Thr Thr Ser Glu Phe Tyr Leu Ser Asp Cys Asn Val Thr Ser Arg
85 90 95

Pro Cys Lys Tyr Lys Leu Lys Lys Ser Thr Asn Thr Phe Cys Val Thr
100 105 110

Cys Glu Asn Gln Ala Pro Val His Phe Val Gly Val Gly His Cys
115 120 125

<210> 29

<211> 4

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:CAAX motif to
target heterologous proteins to the plasma
membrane, where A = aliphatic amino acid and
X = Ser, Met, Cys, Ala or Gln

<400> 29

Cys Val Ile Met
1

<210> 30

<211> 27

<212> DNA

<213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:Rana pipiens
 Onconase degenerate forward primer

<400> 30
 agrgatgtkg attgygataa yatcatg

27

<210> 31

<211> 27

<212> DNA

<213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:Rana pipiens
 Onconase degenerate reverse primer

<400> 31
 aaartgmacw ggkgcctgrt tytcaca

27

<210> 32

<211> 96

<212> DNA

<213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:Rana
 catesbeiana ribonuclease synthetic gene (RaCOR1)
 oligonucleotide

<400> 32
 cagaactggg ctactttcca gcagaaacat atcatcaaca ctccgatcat ctgcaacact 60
 atcatggaca acaacatcta catcgttggt ggtcag

96

<210> 33

<211> 86

<212> DNA

<213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:Rana
 catesbeiana ribonuclease synthetic gene (RaCOR1)
 oligonucleotide

<400> 33
 tacatcgttg gtggtcagtg caaacgtggt aacactttca tcatctctct gctactactg 60
 ttaaactgat ctgcactggt gttatc

86

<210> 34

<211> 96

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Rana
catesbeiana ribonuclease synthetic gene (RaCOR1)
oligonucleotide

<400> 34

atctgcactg gtgttactaa catgaacgtt ctgtctacta ctcgtttcca gctgaacact 60

tgcaactcgta cttctatcac tccgcgtccg tgcccg

96

<210> 35

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Rana
catesbeiana ribonuclease synthetic gene (RaCOR1)
oligonucleotide

<400> 35

gttgataaca ccagtgcaga t

21

<210> 36

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Rana
catesbeiana ribonuclease synthetic gene (RaCOR1)
oligonucleotide

<400> 36

atctgcactg gtgttatcaa c

21

<210> 37

<211> 95

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Rana
catesbeiana ribonuclease synthetic gene (RaCOR1)
oligonucleotide

<400> 37

actccgcgtc cgtgcccgtg ctcttctcgt actgaaacta actacatctg cgtaaagtgc 60

gaaaaccagt acccggttca ttctgctggt atcgg

95

<210> 38

<211> 71

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Rana
catesbeiana ribonuclease synthetic gene (RaCOR1)
oligonucleotide

<400> 38

atatatctag aaataatttt atttaacttt aagaaggaga tatacatatg cagaactggg 60

ctactttcca g

71

<210> 39

<211> 48

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Rana
catesbeiana ribonuclease synthetic gene (RaCOR1)
oligonucleotide

<400> 39

cgcgccggat ccctactacg ggcaacgacc gataccagcg aaatgaac

48

<210> 40

<211> 96

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Rana
catesbeiana ribonuclease synthetic gene (RaCOR1)
oligonucleotide

<400> 40

cagaactggg ctactttcca gcagaaacat atcatcaaca ctccgatcat ctgcaacact 60

atcctgcaga acaacatcta catcggttggt ggtcag

96

<210> 41

<211> 96

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Rana
catesbeiana ribonuclease synthetic gene (RaCOR1)
oligonucleotide

<400> 41

atctgcactg gtgttatcaa cctgaacggt ctgtctacta ctcgtttcca gctgaacact 60

tgcactcgta cttctatcac tccgcgtccg tgcccg

96

<210> 42

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Rana
catesbeiana insertion primer for NdeI restriction
site

<400> 42

ggattccata tgcagaactg ggctatttttc cag

33

<210> 43

• <211> 6

<212> PRT

<213> Artificial-Sequence

<220>

<223> Description of Artificial Sequence:six histidine
residue tag at amino terminus

<400> 43

His His His His His His

1

5